BOTANICAL GAZETTE.

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BRYOLOGICAL NOTES.—The following species of *Musci* were collected by the writer during the fall and winter of 1875, and the identifications are partly his own and partly the result of the investigations of Prof. D. C. Eaton, of Yale College, and Mr. Eugene A. Rau, of Bethlehem, Penn. Of the genus *Sphagnum*, or Peat Mosses, we have *S. cuspidatum*, Ehrh., common in the very wet woods, and now and then one finds a few tufts of *S. squarrosum*, Pers. *Gymnostomum curvirostrum*, Hedw., is very plentiful upon the moist limestone cliff rocks and at Clifty Falls affords a firm support on the sides of the cliffs and also a useful covering for the roots of the beautiful *Sullicantia*. We have also obtained a few stems of *G. rupestre*, Schw. *Weissia viridula*, Brid., though of humble growth, makes in late winter an object of much attractiveness in the open woods and fields, with its bright green leaves and dense cluster of fruiting stems. The genus *Dicranum* has a most abundant representation in the species *D. scoparium*, L., and *D. heteromallum*, Hedw., in the moist woods, while very rarely *D. montanum*, Hedw., is found, and along some of the small streams appear small growths of *D. varium*, Hedw. *Ceratodon purpureus*, Brid., is not uncommon in the rotting debris of most woods, while *Leucobryum glaucum*, Hampe, has never been found upon the river hills, although its white foliage appears abundantly in the flat timber lands. *Fissidens adiantioides*, Hedw., is plentiful in the clayey soil of the many brooks, and *F. subbasilaris*, Hedw., is very common to old logs, stumps and bark of trees. Mr. Rau has also noted in my collection a new species described by Mr. Austin, *F. decipiens* (I think it is). *Trichostomum pallidum*, Hedw., occurs sparingly on the river bluffs. Among the *Barbulæ*, with their long hair-like peristomes, we have found but two species, *B. unguiculata*, Hedw., and *B. cæspitosa*, Schw.

The beautiful *Drummondia clavellata*, Hook., frequently spreads its rich velvety mats upon the bark of the beech, but not uncommon to other trees and even logs. *Orthotrichum strangulatum*, Beauv., hides away its unassuming presence in many a furrowed elm or maple, while its peculiar hairy calyptra cautiously steals out from among the surrounding leaves as the moisture of spring appears and snugly hides itself in the same covering from the rays of the noon-day sun. As the winter months draw to a close, *Schistidium apocarpum*, Br. & Sch., occurs in abundant fruit, giving with its peculiar brownish green an attractive covering to the drear rocks. Associated with the last, one occasionally finds small growths of *Hedwigia ciliata*, Ehrh., while over the ground in never failing abundance *Atrichum angustatum*, Beauv., never fails to put in an appearance. Of the large and striking *Polytrichums*, whose 64-toothed peristome is an object of beauty even to the untutored eye, we have the two species, *P. commune*, L., and *P. formosum*, Hedw. Along most of the woodland rivulets occurs an abundance of *Aulacomnion palustre*, Sch., while in most wet woods and thickets *A. heterostichum*, Br. & Sch., is not uncommon. Many a dull old oak or rotten log is covered with beauty by the roseate mats of *Bryum roseum*, Schreb., and here and there over the ground and about the decayed roofs of dwellings the silvery leaves of *B. argenteum*, L., are easily recognized, while the cool and limpid waters of numerous springs among the cliffs give life and beauty to the lovely *B. Wahlenbergii*, Schw. The genus *Mnium* seems at least to be well marked in quantity, if not in species, in *M. cuspidatum*, Hedw., and *M. rostratum*, Schw., which appear everywhere. The curled and matted leaves of the graceful *Bartramia pomiformis*, Hedw., together with its apple shaped fruit, helps to

make attractive many a brook side, while in sparing quantities *B. fontana* (?) Brid., and *B. Marchica*, Brid., give an interest to our moss flora to the naturalist.

In the early autumn months *Funaria hygrometrica*, Hedw., with its abundant fruiting masses appears everywhere in moist places. *Physcomitriums pyriforme*, Br. & Sch., is not uncommon in fruit in most old fields during spring. *Leucodon julaceus*, Sulliv., with its plume like stems grows everywhere on the old bark of trees and decaying logs. *Leptodon trichomitrium*, Mohr., shows its much branched and numerous fruiting stems on both logs and trees, but seems to have a partiality for the buckeye. Everywhere in the woods, and alike upon rocks and trees, one finds in striking abundance the dense cushions of *Anomodon attenuatus*, Hub., but *A. obtusifolius*, Br. & Schw., appears but sparingly. Equally abundant with the former is *Leskea rostrata*, Hedw., while *L. obscura*, Hedw., is even less common than the latter *Anomodon*. The ashy mats of *Thelia asprella*, Sulliv., are not uncommon to the bark of trees, which also may be remarked of *T. hirtella*, Sulliv. The soft and delicate *Pylaisæa intricata*, Bry. Eur., abounds in most woods. Of the flat and densely matted *Cylindrothecium*s we have, somewhat sparingly, *C. cladorrhizans*, Bry. Eur., and most plentifully, *C. seductrix*, Bry. Eur., with its peculiar shining leaves.

On every hand one sees the lovely *Climacium Americanum*, Brid., a tree indeed, in miniature and an object of beauty to all. This moss is of peculiar interst here from its presenting many variations, and some of these are so marked that had a person but a limited amount of material he might easily persuade himself that he possessed a new variety. But with abundant material collected under different circumstances of growth, they can all be easily sifted down to the typical form. *Climacium*, although rarely found in fruit, has been collected abundantly here, and also in the state of Connecticut, in 1874. The genus *Hypnum* is well characterized here in numerous species, and of these I will make a simple enumeration: *H. acuminatum*, Beauv., *H. adnatum*, Hedw., *H. Alleghaniense*, C. Mull., *H. currifolium*, Hedw., *H. cylindrocarpum*, C. Mull., *H. deplanatum*, Schimp., *H. gracile*, Br & Schimp., *H. Haldanianum*, Grev., *H. hians*, Hedw., *H. hixpidulum*, Brid., *H. imponens*, Hedw., *H. lætum*, Brid., *H. minutulum*, Hedw., *H. recurvans*, Schw., *H. riparium*, Hedw., *H. rivulare*, Br. Eur., *H. serpens*, Hedw., *H. serrulatum*, Hedw., *H. strigosum*, Hoffm., *H. tamariscinum*, Hedw., and *H. Boscii*, Schw. *H. Boscii* I obtained in good fruit during December and January last. It was to me a most interesting find and I make this note of it on account of its rare occurrence and therefore its interest to botanists. In these notes upon the mosses of Jefferson County, we have by no means done the region full justice, our time and range being both quite limited and the single season entirely too brief for a full report. —A. H. Young, *Hanover Ind.*

Ferns from Rock Castle Springs, Kentucky.—In August last, Miss G. H. Rule of Philadelphia, whilst on a visit to Louisville, Kentucky, spent a short time at Rock Castle Springs, and during her stay there collected a variety of plants, chiefly ferns, some of which are quite rare. As it is a section of country seldom visited by botanists, I here append a list of them. From the description given by Miss Rule, of the place and its surrounding country, it would well repay a thorough exploration, and doubtless some additional species might be added.

1. *Polypodium vulgare*, L.
2. *Polypodium incanum*, Swartz.
3. *Adiantum pedatum*, L.
4. *Pteris aquilina*, L.
5. *Asplenium pinnatifidum*, Nutt.
6. *Asplenium Trichomanes*, L.
7. *Asplenium ebeneum*, Ait.
8. *Asplenium montanum*, Willd.
9. *Asplenium Ruta-muraria*, L.
10. *Asplenium Filix-fœmina*, Bernh.
17. *Aspidium cristatum*, Swartz.
18. *Aspidium marginale*, Swartz.
19. *Aspidium acrostichoides*, Swartz.
20. *Trichomanes radicans*, Swartz?
21. *Onoclea sensibilis*, L.
22. *Woodsia obtusa*, Torr.
23. *Lygodium palmatum*, Swartz.
24. *Osmunda regalis*, L.
25. *Osmunda Claytoniana*, L.
26. *Osmunda cinnamomea*, L.

11. *Camptosorus rhizophyllus*, Link.
12. *Phegopteris polypodioides*, Fee.
13. *Phegopteris hexagonoptera*, Fee.
14. *Aspidium Thelypteris*, Swartz.
15. *Aspidium Noveboracense*, Swartz.
16. *Aspidium intermedium*, Willd.
27. *Botrychium Virginicum*, Swartz.
28. *Lycopodium alopecuroides*, L.
29. *Lycopodium dendroideum*, M.
30. *Lycopodium complanatum*, L.
31. *Selaginella rupestris*, Spring.
32. *Selaginella apus*, Spring.

The rocks are very abrupt and steep along the river near the "Springs" and it was with great difficulty that some of the specimens were obtained. *Asplenium pinnatifidum*, Nutt., was formerly quite abundant on the cliffs on the Schuylkill near Philadelphia, but of late years very little has been seen there. The specimens from Rock Castle have fronds very much larger, some of them measuring eight inches in length, having a very long and slender prolongation and fertile nearly to the tip. The *Trichomanes radicans*, Swartz? was collected only after a long and laborious search far up among the rocks where the dripping water kept it constantly wet. The specimens were very large and in good condition. This is one of the rarities of that section, and I believe is about its most northern range.

Asplenium Bradleyi, D. C. Eaton., a new species, had been said to grow in the vicinity, and *Asplenium ebenoides*, R. R. Scott., the so called hybrid fern, having been collected a little farther south was also looked for, but Miss Rule did not succeed in finding either of them.

Camptosorus rhizophyllus, Link., was of very luxuriant growth, frequently two or three, and on one occasion I am informed *four* generations were linked together.

ISAAC C. MARTINDALE, *Camden, N. J.*

MISCELLANEOUS NOTES.—In regard to Dr. Douglas' note in the October *Bulletin* I wish to say a word. *Erechthites hieracifolia*, Raf., grew abundantly three years ago last August at Whitewater, Wisconsin, and under such surroundings that I am not willing to believe I noticed it on its first appearance in the place. *Lobelia syphilitica*, L., is often white in Wisconsin. I found a station on Skinner Creek, Green Co., Wis., from which I gathered white specimens for several years and have not the least doubt but they can be had there to-day.—HERBERT E. COPELAND.

I find on looking over some specimens in my hebarium a peculiar form of *Elephantopus Carolinianus*, Willd. The peculiarity consists in the leaves being opposite instead of alternate. Near the base of the specimen the leaves are in whorls of three, but when they advance further up the stem they are very clearly opposite. I examined the specimen somewhat critically in order to see if other variations did not occur, but could find none unless it was the absence of the characteristic "*somewhat hairy*." I did indeed find some hairs, yet hardly enough to be noticed in describing the plant.

Among our cultivated plants we have very commonly *Euphorbia marginata* Pursh. About two years ago it began to escape and now on the north bank of the Eel river it covers a low bluff for nearly a mile. I have not seen it recorded as having become naturalized as far north as this before, nor did I see it, except as cultivated, until in 1874. From my knowledge of its hardiness and rapidity of growth, I presume we may certainly count it as a permanent resident.—M. S. C.

A few weeks ago I found near Loveland, Ohio, a peculiar form of Ragweed (*Ambrosia artemisiæfolia*). Gray, in the description of the genus says: "Sterile and fertile flowers occupying different heads on the same plant; the fertile 1—3 together and sessile in the axils of leaves or bracts, at the base of the racemes or spikes of sterile heads." In the specimens I found there were no sterile flowers to be seen, and instead of the fertile flowers being in the axils of the leaves, they were arranged in upright spikes as the *sterile* usually are. There were some half dozen plants in a space about 50 yards square in one locality, and in another place one and the largest specimen, less than three feet high. A year or so ago my brother found a specimen of the same kind, but he does not know where. Is this a common thing to find or not?

I notice in the October BULLETIN that a correspondent found a white *Lobelia syphilitica*. About a month ago I found one about two miles from our house. It was growing within two inches of a plant with the flowers blue and was the only one seen, although the blue ones were plenty enough. A week after, in a damp place in an open wood, I found two specimens growing close together with pinkish flowers.

A couple of years ago we found in the east end of Cincinnati, along side of a railroad track, numbers of the *Euphorbia marginata*, seemingly perfectly naturalized. This is recorded as a native of Nebraska, but has made its way east and established itself. Last year it was abundant and this year also.—JOSEPH F. JAMES, *Cincinnati*.

I would like to send a few notes on some variations in plants, noticed at different times, and in different places. In 1872–3–4, I very frequently found *Polygonum amphibium* with salver form stipules. The var. *terrestre* especially showed this feature. Sometimes I found it growing on high, dry, sandy soil, quite hairy with rust colored pubescence. I also found *P. Careyi* with salver form stipules. I wrote to Prof. Gray, but could not learn that he had ever seen this feature. The past season I found the same variation in the var. *terrestre* of *P. amphibium*, around Bloomfield, Conn. I also found *P. arifolium* in several localities with salver form stipules. From this it would seem as if the whole of this genus might, under certain circumstances, present this singular feature. One form of *Polygonum*, very frequent in southern Iowa I have never seen noticed, though it may have been. When young, the leaves had the color and the woolly pubescence of a *Gnaphalium*, but when old the leaves more resemble those of *Aster sericeus* in their silky appearance Often there were dark triangular patches on the young leaves. The plant was from four to five feet high, but I never was fortunate enough to find it in bloom except once, and the blossom was somewhat like *P. amphibium*. It generally grew on rather low ground.

Perhaps the white *Eupatorium fistulosum* is not so rare as some other forms, but I have found several specimens the past season. Also the *Eupatorium purpureum* with opposite leaves, in several localities. Last year I found *E. perfoliatum* with leaves in threes, and also with purple flowers. This year I have found a great many specimens with purple flowers, and in these cases the stem was often purple.

I have several times noticed the feature, referred to by one of your correspondents, in *Verbascum Thapsus*, and also in *Lappa major*. The "wavy" apearance in the leaves of young plants of the mullein is very common. I found a very remarkable *Hieracium* last fall. It was a young plant, growing in a cleft of a trap rock. The older leaves were thin and veiny, not much unlike those of *H. venosum*, L., but more hairy and nearly oval, but the younger ones were like the young leaves of *Verbascum Thapsus*, except they tapered into a short petiole. There seemed to be a regular gradation in the transition. Can any one give a little light on the subject of these variations?—N. COLEMAN, *Bloomfield, Conn.*

I find the seed vessels of *Staphylea trifolia* three, four and five-celled in the same cluster and upon the same tree. Gray and Wood give the seed vessels *three*-celled without exception, but upon quite a large tree for the *Staphylea* I find them usually four-celled. Has any one else noticed the same?

Is it usual for the bud of *Trillium cernuum* to be *erect* till nearly the time of flowering? I have found several erect at first, afterward the bud quite inclined, then the flower hanging under the leaves.—C. C. H., *Poughkeepsie, N. Y.*

POLYMNIA CANADENSIS, L., VAR. DISCOIDEA.—This is only the late-flowering state of the species, judging from a plant in my garden, which bore the ordinary flowers with rays early in the season, but in September branched extensively and produced an abundance of discoid heads.—P., *Oquawka Ill.*

CLAYTONIA VIRGINICA, L.—The following observations on *Claytonia Virginica* may be of interest, as they seem to establish the fact of heteromorphism. The following variations were noticed:

1. The larger number of specimens were roseate, with stamens equaling or exceeding the style, anthers all perfect and polien bearing.

2. A smaller number of specimens have flowers pure white, smaller every way; style as in No. 1; stamens imperfect, filaments short and unequal, anthers bearing no pollen.

3. Specimens were found with flowers as in No. 1 and No. 2, growing from the same tuber, on different stems.

4. Later in the season a number of specimens were found, in which a part of the stamens of each flower were of ordinary length and perfect, and part were short and abortive. Fruit was perfect and abundant in all forms. How can Prof. Meehan's theory of self-fertilization during "sleep" work in No. 2? Nearly the same variations were noted in *Epigæa repens*, except there was no difference in length of styles in two forms.

I found a half dozen specimens of pure white *Lobelia syphilitica* a few days before I received your October No.—C. F. WHEELER, *Hubbardston, Mich.*

SEVENTH ANNUAL REPORT OF THE GEOLOGICAL SURVEY OF INDIANA, BY E. T. COX, STATE GEOLOGIST, 1875.—This is the largest report sent out by the Geological Survey, containing some 600 pages of valuable material. Two contributions are of special interest to botanists and hence come within the scope of the GAZETTE to notice. They are "Species of Fossil Marine Plants from the Carboniferous Measures," by Prof. Leo Lesquereux, and a "Catalogue of the Flora of the Lower Wabash," by Dr. J. Schneck. The latter is worthy of a more extended notice than can be given it in this number and will be reviewed in a subsequent article. The former more strictly belongs to Geology, but is of interest to all botanists interested in the ancient as well as the modern flora of our country. It is a description of five new species of fossil marine plants from the coal measures, and their interest and importance cannot better be stated than in the introduction of the author.

"The occurrence of fucoidal remains or of fossil marine plants, in the coal measures, is extremely rare. Indeed it is questionable if any species of this kind has ever been discovered in the carboniferous formation of Europe. In this country one species only has been described, in 1866, from specimens found in a thin bed of limestone, occupying the place of the millstone grit, opposite Wurtemberg, on Slippery Rock creek, a branch of the Coneconessing river in Pennsylvania. The species is related by its characters, to the so-called and well known *Fucoides Cauda-galli* of the middle and upper *Devonian*, and therefore does not represent ancient types, like those which are described here, and which recall the oldest forms of marine plants, those of the Silurian, even of the lower divisions of this formation, the calciferous sandstone of New York.

It may seem of little importance to have plants of this kind described and figured in a geological report, but as geologists have to consider, for the determination of the age of the strata of our earth, the remains of plants and animals which, preserved in their compounds, may determine by their nature the position of valuable deposits of minerals, even mere fragments of these organisms become important for their researches. And when fossils are found, which not only represent new types of plants or of animals, but which are remarkable by their presence in a formation where nothing like has ever been found, the discovery is indeed worth recording in the annals of geology, and gives to the report where they are described a wide and general interest."

ASTER OBLONGIFOLIUS, Nutt.—Beautiful specimens of this *Aster* were found growing at Clifty Falls, October 12th of this year. It takes the form of a small shrubby

bush and grows at the very edge of the cliffs, hanging down over them so as to make it almost dangerous to collect it. Near Madison it was found growing all over one hillside, its large violet-purple heads making it an object of much beauty. Its leaves are so rigid that they soon dry and become very brittle and hence in collecting specimens in flower all the lower leaves are apt to drop off and leave only the leafless stock.—J. M. C.

RECENT PERIODICALS.—*American Journal of Science and Arts*, October. The only botanical note is an extract from the *Buffalo Courier* on "Sensitive Stigmas as an aid to cross fertilization of Flowers," by Prof. W. J. Beal, read at the recent meeting of the American Association held at Buffalo. Observations were especially made upon *Martynia proboscidea*. It seems that the humble bee or common hive bee aids in the cross fertilization of this plant. When the bee, loaded with pollen, alights on the spotted, showy part of the corolla, it crawls in, first hitting the stigmas. "These are sensitive to the touch and close up in five to ten seconds, often before the insect is ready to back out of the flower. If they are not quite closed at that time, the bee shuts them by pushing her back against the back of one of the stigmas. The lower lobe of the flat stigma next to the bee's back is the larger. No pollen can be left as the insect retreats and a cross of pollen is usually certain. If not freely dusted with pollen the stigmas open again in about fifteen minutes." The *Iris* is mentioned as acting in a similar way. The stigmas of *Mimulus ringens* are also sensitive and dusted with pollen by small Hymenoptera. The stigmas of *Mimulus luteus* and *M. moschatus* close quickly upon being touched. *Tecoma radicans*, *T. grandiflora* and *Utricularia vulgaris* are all like *Martynia* in the peculiarities mentioned.

American Naturalist, October.—"Carnivorous Plants," by Prof. W. J. Beal, is rather an enumeration of those species and genera of plants which catch insects by various contrivances. Commencing with the discovery by Mr. Ellis, in 1768, of the powers of the Venus fly-trap, we are led down through *Drosera*, *Sarracenia*, *Nepenthe*, *Pinguicula*, *Utricularia*, *Solanaceæ*, and *Silene*, to *Martynia proboscidea* which the author thinks is a true insectivorous plant. This plant, with its curious cross fertilization and insectivorous propensities, may prove to be an exceedingly interesting one. As *Martynia* is within reach of almost every reader of the GAZETTE, I have thought it would not be unprofitable to quote some of the observations made upon it by Prof. Beal, and they can be very easily verified by almost any botanist:

"I have lately given some attention to the *Martynia* on account of the great number of small insects which it catches by glandular hairs. On August 3d I counted seventy-six small Diptera and some other insects on the upper side of a young leaf of about four inches average diameter, and two hundred on the under side. The insects are caught on all parts of the plant which are exposed, on the stems, on the calyx and corolla, including even the throat of the corolla. Among a lot of others was one plant about three feet high, spreading three feet in diameter, which according to estimate had seven thousand two hundred small flies on it at one time. The hairs are very numerous all over the surface. None of them are sensitive, as I can find. They vary exceedingly in length, from three-sixteenths of an inch to one one-hundredth or even shorter. Some of them have as many as ten cross partitions. The contents of these cells appear quite clear, except one near the top, next to the top cell. This is larger than several of those below, and contains chlorophyll. It seems to be something like a gland. Above this is a larger cell, with perpendicular striæ along its sides. When fresh and undisturbed the top is nearly spherical and resembles a small drop of dew. The secretion is quite copious and exceedingly viscid, with an unpleasant odor. I placed some small fragments of raw beef on the glands one morning, but the sun seemed to dry them up, much as it did those left on blades of grass which had no glands. I placed some very minute portions on the glands in a spot sheltered from the

direct rays of the sun. In some cases the whole of the pieces of beef disappeared. The small insects seem to live but a short time, although they are touched by only two to four hairs. The substance seems soon to be taken out of the insects. In my opinion, it is a true insectivorous plant."

Gardener's Monthly, October. This old and ably edited monthly is always full of matter interesting to all botanists, not only to the horticulturist but the scientific botanist. We can only make mention of one or two notes to be found under the department of "Natural History and Science." An article "On Graft Hybrids" by Thos. Meehan, the Editor, read before the American Association for the Advancement of Science, at Buffalo, goes to prove from actual experiment that hybrids may be obtained by grafting as well as by seeds. An interesting extract is made from a letter written by Mr. J. G. Lemmon, a California botanist upon the age of the Mammoth Trees (*Sequoia gigantea*). In it Mr. Lemmon takes sides with Dr. Gray and combats the popular notion that these trees are several thousand years old.

Field and Forest, October. The 'Flora Columbiana' is brought down to *Liliaceæ*. A pear tree in the grounds of the Department of Agriculture blossomed, September 8th, for the second time, the first set of leaves and fruit having been destroyed by a small fungus in July. A new locality for *Tipularia discolor* has been discovered where an abundance of this rare Orchid can be obtained in flower. It is common in the leafing condition, but the flowers do not appear till long after the leaf has disappeared. The new locality is on the Virginia shore of the Potomac not far above the Three Sisters. The exact time for collecting it in flower is the last week in July.

Proceedings of Davenport Academy of Natural Sciences.—We noticed very briefly in the GAZETTE for November the volume published by the above society. Some papers bearing on Botany seem to us deserving of a fuller mention than was then given. The papers of special interest to botanists are "Obituary Notice of Prof. John Torrey," by *Dr. C. C. Parry*, "Summer Botanizing in the Wasatch Mountains, Utah Territory," by the same author, and "List of Phænogamous Plants collected in the vicinity of Davenport," by *J. G. Haupt* and *J. J. Nagel*. The first paper, read March 28th, 1873 is a beautiful and touching tribute to the memory of the "father of American Botany" by one who had known him well for twenty-eight years.

The second paper, by the same author, is one of special interest and worthy of a separate notice. It is in the form of a letter addressed to Dr. Gray and is a brief sketch of summer botanizing in the Wasatch during the season of 1875. The author wished especially to note the geographical range of the *Coniferæ* from East to West. He selected as camp a location near the head of Lake Utah, "not far from the high culminating point of the Wasatch range known as Mount Nebo." "One main object of our trip was to determine definitely the important practical question whether the fruiting of *Abies* was strictly biennial, or, in exceptional cases, annual. I had noted, in 1874, the abundant seeding of *Abies* all over this district, extending to the Eastern Rocky Mountains, but now not a single developing cone could be met with in passing through extensive forests of *Abies concolor*, this condition also holding good of other species. The same fact has also been noted by the enterprising collector, J. G. Lemmon in the Sierra Nevada, so that it may be definitely stated, for the benefit of future collectors, that only on *even years* can *Abies* be relied on for a seed crop."

An interesting description is given of the remarkable *Spiræa cæspitosa* which is such an interesting plant that I know readers of the GAZETTE will be pleased to read a description of it from so able a writer and so acute an observer as Dr. Parry.

"Among the plants affecting rocky locations, the most eagerly watched and the latest to flower was the remarkable *Spiræa cæspitosa*, Nutt. Popularly known under the appropriate common name of "*tree moss*," it spreads its closely matted foliage over the face of bare rocks, insinuating its taproots, abundantly garnished with terminal fibers, into the narrowest crevices, to which it adheres with a grip almost as tenacious

as the rock itself; only when accidentally it has taken root in a coarse gravelly *debris* can it be successfully removed with its terminal fibrous roots. The main stem, often attaining a thickness of an inch or more, divides horizontally into radiating gnarled branches, which send off from the axils of the primary leaves numerous leafy rosettes by which the growth of the plant is maintained, and from the axis of which the slender bracted flower stems arise. These stems from 3 to 6 inches high are crowned for about one-third their length with a dense cylindrical spike of small white flowers, with exserted style and stamens, set in a light green tomentose calyx. In thrifty specimens these flowering spikes are occasionally branched. The prostrate growing shoots whenever they light upon a suitable crevice strike root and thus help to maintain the growth of the parent plant; where these favorable conditions are wanting, the whole plant, often covering several square feet, can be lifted up, showing on the under surface the remains of dead leaves, in the decaying mould of which moisture is retained to keep up the fresh verdure of the young twigs. It seems to flourish best on the north side of exposed limestone rocks occupying a considerable range of altitude above the lower foothills, choosing by preference the rugged slopes of moderately steep canons. Its flowering period is earliest on the higher elevations, continuing from the latter part of August to the first of October. The peculiar adaptation of this plant for ornamental rock work can be appreciated by those who have once seen it in its native haunts, and it is hoped that from plants and seeds somewhat copiously collected it may eventually find a much larger number of admirers in gardens devoted to this charming class of horticultural adornments."

A STRANGE COLLINSIA.—During the season I received a flower for determination, which at first glance I pronounced to be *Collinsia verna*, Nutt. On closer examination however I found the specimens I had presented two marked variations from the typical plant. The whole were invariably 8-flowered instead of "*about six.*" Then the corolla instead of being only "*twice the length of the calyx*" was in every instance fully three times its length. On searching the locality in which they had been found, I discovered that an area of about one-half an acre was thickly covered with the plant, and that fully a third of the specimens presented these variations. Heretofore all my observations of Collinsia have led me to believe it to be a constant species. The locality in which these irregular Collinsias occur was a moist ridge slightly above the level of the surrounding swamp. The soil, the rich black loam characteristic of our Indiana prairies. I regret exceedingly that having no facilities for preserving them I secured no specimens. M. S. C.

In the italicised characteristics of *Rudbeckia hirta*, L., I find, upper leaves *sissile*. I have specimens in which the upper leaves are distinctly petioled. The petiole broad-margined. It may be possible that the specimens are in an imperfect state, although it seems to me, every other characteristic being perfect, that there can be no doubt that this is a variation from the typical plant. I noted it only on account of its differing from the description in Gray's Manual, and because I deemed these slight departures from the typical form of interest to botanists. M. S. C.

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